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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,468	08/24/2005	Naohiko Uchiumi	264532US0PCT	2239

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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SLAWSKI, MAGALI P

ART UNIT	PAPER NUMBER
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1728

NOTIFICATION DATE	DELIVERY MODE
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12/07/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/521,468	<b>Applicant(s)</b> UCHIUMI ET AL.	
	<b>Examiner</b> Magali P. Slawski	<b>Art Unit</b> 1728	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6,8-16 and 27 is/are pending in the application.
- 4a) Of the above claim(s) 1-3,5,6,8-25 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8-16 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

The amendment filed October 14, 2010 was received.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

Claims 1-13, 16 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara et al. (2002/0028871 A1), henceforth **Kawahara 871**, in view of Ninomiya et al. (EP 1085028 A1), henceforth **Ninomiya**.

Regarding **claim 1**, step 1, Kawahara 871 teaches starting with an ethylene-vinyl alcohol (EVOH) copolymer solution (0012 lines 2-3) containing 50 parts by weight or more of alcohol with respect to 100 parts by weight of EVOH (0012 lines 5-6). The alcohol's boiling point is no higher than 100 C (0012 lines 6-7). Kawahara 871 teaches putting this solution into a vessel (0012 lines 8-9). Kawahara 871 teaches putting the solution in contact with water vapor inside the vessel (0012 lines 9-10) to let the alcohol out with the water vapor (0012 line 10) and then discharging from the vessel an EVOH hydrous composition containing 0 to 10 parts by weight of said alcohol (0012 lines 12-13) and 10 to 1000 parts by weight of water (0012 lines 13-14) with respect to 100 parts by weight of the EVOH (0012 lines 14-15).

Regarding claim 1, step 2, Kawahara 871 teaches cutting the resulting copolymer (0017 lines 2-4) in a molten state (melt, 0017 lines 8-9) to make pellets (0017 line 2).

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Regarding claim 1, step 3, Kawahara 871 teaches drying these pellets to reduce their water content (0076 lines 1-4). Kawahara 871 does not teach what apparatus is used to dry the pellets. However, Ninomiya, teaches using a dryer (page 7 lines 3-5) to dry the pellets. Therefore it would have been obvious to one of ordinary skill in the art to combine the use of a dryer with the steps taught Kawahara 871 in order to achieve predictable results (effective drying) with a reasonable expectation of success.

The following limitation appears to modify step 3 rather than step 4: Claim 1, step 4 recites that the drying step of step 3 reduces the pellets' water content to an amount between 0.1 wt % and 4.5 wt %. Kawayara 871 teaches that the dried pellets have a water content between 0.5 wt % and 1 wt % (0076 lines 1-5), which overlaps with the claimed range. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I.

Regarding claim 1, steps 4-5, Kawahara 871 does not teach melt-kneading the pellets from step 3 and pelletizing again. However, Kawahara teaches blending EVOH that has different degrees of saponification (0023). Ninomiya teaches melt-kneading as an effective way of blending different types of EVOH (0055 first few lines and 0070 first sentence). Specifically, Ninomiya teaches pelletizing an EVOH composition (page 5 lines 56-57), drying those pellets (page 6 lines 54-55), melt-kneading them in an extruder (page 7 ones 14-16) and then pelletizing again (page 7 line 27). The melt-kneading blends the mixture while the second pelletizing step is there to put the resin in

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usable form as a stock material. Therefore it would have been obvious to one of ordinary skill in the art to combine steps 4 and five with the steps taught by Kawahara 871 in order to produce homogeneous pellets of mixed composition.

Regarding **claim 2**, Kawahara 871 teaches that the EVOH composition is 3 to 70 mol % ethylene and at least 80 mol % saponified (0016 lines 2-5).

Regarding **claim 3**, Kawahara 871 uses methanol as the alcohol (0016 lines 1-2).

Regarding **claim 5**, Kawahara 871 teaches introducing the EVOH solution continuously (continuous, 0050 line 8) into a tower vessel (column, 0050 line 9) and bringing the EVOH solution contact with the water vapor in the vessel (0051 lines 1-3).

Regarding **claim 6**, Kawahara 871 teaches introducing the EVOH solution from the top of the tower (0051 lines 5-6) and the water from the bottom (0015 lines 5-7). The two fluids meet in a countercurrent flow (0051 line 8). Then the EVOH hydrous composition comes out the bottom of the vessel and the water and alcohol come out the top (0051 lines 9-12).

Regarding **claim 8**, Kawahara 871 teaches washing the pellets from step 2 to rinse off a saponification catalyst residue (0068 lines 5-6). Kawahara 871 teaches drying these pellets (0076 lines 1-4). Kawahara 871 does not teach using a dryer. However, Ninomiya teaches using a dryer (page 7 lines 3-5) to dry the pellets. Therefore it would have been obvious to one of ordinary skill in the art to combine the use of a dryer with the steps taught Kawahara 871 in order to achieve predictable results with a reasonable expectation of success.

Regarding **claim 9**, Kawahara 871 teaches immersing the pellets from step 2 in an aqueous solution containing a carboxylic acid, a boron compound, a phosphoric acid compound (phosphate), an alkali metal salt or an alkaline earth metal salt before drying (0070 lines 6-11). Kawahara 871 teaches drying these pellets (0076 lines 1-4). Kawahara 871 does not teach using a dryer. However, Ninomiya teaches using a dryer (page 7 lines 3-5) to dry the pellets. Therefore it would have been obvious to one of ordinary skill in the art to combine the use of a dryer with the steps taught Kawahara 871 in order to achieve predictable results with a reasonable expectation of success.

Regarding **claim 10**, Kawahara 871 teaches drying at 100 C (0082 line 8).

Regarding **claim 11**, Kawahara 871 teaches reducing the water content to less than 10 % (up to 1 %, 0076 line 3).

Regarding **claim 12**, Kawahara 871 does not teach step 4. However, Ninomiya teaches melt kneading the EVOH copolymer such that its water weight after melt-kneading is less than 1 % (page 9 lines 39-41). Therefore it would have been obvious to one of ordinary skill in the art to combine this step with the steps taught by Kawahara 871 in order to achieve predictable results with a reasonable expectation of success.

Regarding **claim 13**, Kawahara 871 does not teach step 4. However, Ninomiya teaches removing water from the molten resin in the extruder (page 7 lines 14-16). Therefore it would have been obvious to one of ordinary skill in the art to combine this step with the steps taught by Kawahara 871 in order to achieve predictable results with a reasonable expectation of success.

Regarding **claim 16**, Kawahara 871 does not teach step 5. However, Ninomiya discloses cutting the pellets of step 5 after cooling (p 12 ln 36). Therefore it would have been obvious to one of ordinary skill in the art to combine this step with those taught by Kawahara 871 in order to achieve predictable results with a reasonable expectation of success.

Regarding **claim 26**, Kawahara 871 teaches that the pellets after drying in step (3) have a water content of 0.5 % to 1 % (0076 top), which falls within the claimed range of 0.1 % to 4.5 %.

Regarding **claim 27**, Kawahara's extruded strand has 0 to 10 parts alcohol and 10 to 500 parts water relative to 100 parts EVOH (0057). That means that the water content is about 8 % to about 83 %. After drying, Kawahara's pellets have a water content of 0.5 % to 1 % (0076 top). That represents a water loss of more than 0.1 % by weight. This decrease in water content is achieved in the drying step and remains effective once the pellet is dried through the time that it is discharged from the extruder. While Kawahara does not teach a dryer, why a using a dryer would have been obvious to one of ordinary skill in the art is explained in the rejection of claim 1.

Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawahara 817** in view of **Ninomiya** as applied to claim 1 above, and further in view of Kawahara et al. (EP 1072616 A2), henceforth **Kawahara 616**.

Regarding **claims 14**, Kawahara 871 does not teach step 4. However, Kawahara 616 teaches adding a carboxylic acid, a boron compound, a phosphoric acid

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compound, an alkali metal salt or an alkaline earth metal salt in the extruder as well as in the washing fluid (0026) because it is difficult to get the additive's concentration right when adding it only in the washing step (0064 lines 42-45). Therefore it would have been obvious to one of ordinary skill in the art to add the additive(s) in the melt-kneading step because Kawahara 616 teaches doing so for better control of the additive's concentration.

Regarding **claim 15**, Kawahara 871 teaches immersing the pellets from step 2 in an aqueous solution containing a carboxylic acid, a boron compound, a phosphoric acid compound (phosphate), an alkali metal salt or an alkaline earth metal salt before drying (0070 lines 6-11). Kawahara 871 does not teach step 4. However, Kawahara 616 teaches adding a carboxylic acid, a boron compound, a phosphoric acid compound, an alkali metal salt or an alkaline earth metal salt in the extruder as well as in the washing fluid (0026) because it is difficult to get the additive's concentration right when adding it only in the washing step (0064 lines 42-45). Therefore it would have been obvious to one of ordinary skill in the art to add the additive(s) in the melt-kneading step because Kawahara 616 teaches doing so for better control of the additive's concentration.

### ***Response to Arguments***

Applicant's arguments filed October 14, 2010 have been fully considered but they are not persuasive.

Applicant argues that Kawahara dries the pellets so that they contain at most 1 % or 0.5 % water by weight. In response to Applicant's argument, the range between 0.5



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% and 1 % overlaps with the claimed range. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I.

Applicant argues that Ninomiya teaches that, when the water content is less than 5 % by weight, "the drying effect of the invention and/or effects of the technique of blending according the present invention... cannot be materialized to the full" (0051). In response to Applicant's argument, Ninomiya says "in full"—not "at all." It is not clear from Ninomiya's disclosure that one would get *no* benefit from melt-kneading and re-pelletizing Kawahara's pellets, even if the results were not perfect. One of ordinary skill in the art could still have tolerated a modest decrease in production efficiency that might result from a lower water content. Furthermore, Applicant's specification and arguments do not appear to show that the claimed range is critical to the success of the claimed method. It is not clear from any part of the record that any particular water content would have produced any new or unexpected results.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magali P. Slawski whose telephone number is (571) 270-3960. The examiner can normally be reached on Monday through Thursday, 9 a.m. to 5 p.m. EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer K. Michener can be reached on (571) 272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer K. Michener/  
Supervisory Patent Examiner, Art Unit 1728

/Magali P. Slawski/  
Examiner, Art Unit 1728